

EOSDIS IV&V
Monthly Program Status Report
For the Period 10/1/94 to 10/31/94
(Deliverable 0201.4)

November 15, 1994

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1. PROGRAMMATIC INFORMATION

1.1 IV&V Project Organization Chart

Exhibit 1-1 illustrates the current organizational structure of the EOSDIS IV&V team. For each lead position, we have identified company affiliation, geographic location, phone number, and task assignment. Also included is the number of full time equivalent engineers assigned to each technical task.

1.2 Overview of Work Being Performed

a) List of Active Task Assignments

- ¥ Task 1: IV&V Program Management
- ¥ Task 2: Facilities, Operations, and Program Reporting
- ¥ Task 3: IV&V Plans
- ¥ Task 4: IV&V Infrastructure and Tool Development
- ¥ Task 5: Requirements Analysis and Traceability
- ¥ Task 9: Key Interface Analysis
- ¥ Task 10: Development of EOSDIS Integration and Certification Plan
- ¥ Task 12: EDOS IV&V

b) Key Recent Accomplishments

¥ Programmatic

- Initiated new task (i.e., Task 12) to support the EDOS project.
- Provided draft inputs for Special Studies Task (i.e., Task 13) which will be used to address any short-term needs that may arise during the course of this IV&V contract. Initial activities will focus on the Version 0 assessment and ETS monitoring.
- Prepared briefing on IV&V activities and findings to be given in mid-November to John Dalton, Deputy Associate Director, ESDIS Project.
- Established temporary E-mail link between the Intermetrics office in Greenbelt and the Intermetrics office at the NASA IV&V Software Facility in WV by connecting to the NASA mail system. A more direct mail link is currently being implemented.

Exhibit 1-1: Org Chart (Landscape)

- Finalized arrangements with John Latyak, the Network Manager for the NASA IV&V Software Facility in WV, to install a 56KB data link between the Greenbelt office and GSFC. The installation of the line should occur shortly. This link will be upgraded to a T1 line, once we provide appropriate justification.

¥ Technical

- Under Task 3, submitted draft of the Independent System V&V Plan (ISVVP).
- Under Task 4, performed three M1 Demonstrations at the Intermetrics Greenbelt facility. Also continued tool assessments for the Integrated Support Environment (ISE) and delivered the first official release of the ISE System Requirements Documents.
- Under Task 5, completed the Level 3 technical integrity requirements analysis and submitted the Preliminary Requirements Analysis Technical Analysis Report (TAR). Also completed and delivered the Preliminary EOSDIS User Modeling Assessment Report, which focused on user demographics.
- Under Task 9, completed a draft of the TRMM TAR for internal review and submitted a report on the Version 0 performance analysis. Also completed an initial requirements review of the Institutional IRD.
- Under Task 10, submitted an initial Certification White Paper which defines our general approach to certification.
- Under Task 12, reviewed the EDOS Performance Verification Plan (PVP) and supported the 10/17/94 Program Status Review (PSR) by presenting the EDOS IV&V task status. Also, presented our IV&V approach to the EDOS Integration and Test (I&T) Manager.

c) New/Proposed Task Assignments

¥ Special Studies Task - Awaiting Government issue of the Statement of Work for the Special Studies Task.

¥ ETS Acceptance - In order to certify the EOSDIS Test System (ETS), it may be necessary to identify or develop some new testing tools. An assessment should be made to determine the appropriate mechanisms for acceptance testing this system.

d) Follow-up on Action Items from October 17 PSR

- 1) Shade IV&V Milestone Chart to reflect activities already accomplished.
Action: Joe Gitelman, NASA; Ron Cariola, Intermetrics
Status: Done.
- 2) Contact Steve Smith to resolve the issue of accessing the ECOM requirements database. Action: Joe Gitelman, NASA
Status: Open.

- 3) Provide cumulative expenditures for the program in numerical form.
Action: Pam McLaughlin, Intermetrics
Status: Done. Cumulative expenditures are now incorporated within this report.
- 4) Provide projections for program expenditures through September 1995.
Action: Ron Cariola / Pam McLaughlin, Intermetrics
Status: Currently being planned for submission with next 533Q report in December.
- 5) To justify a lowering of the personnel requirements (specifically with respect to Task 4), write a letter to Becky Ragusa describing the job, the minimum qualifications needed, and the cost savings associated with creating this new job category. Action: Pam McLaughlin / Dan McCaugherty, Intermetrics
Status: Letter and revised labor categories submitted to NASA. Awaiting response.
- 6) Provide a quarterly and cumulative breakout of contract dollars (resulting from labor usage, equipment expenditures, etc.) flowing from this program to West Virginia. Include this information with the submission of the 533Q report.
Action: Pam McLaughlin, Intermetrics
Status: Data currently being gathered. Will request clarification on this item to ensure compliance.

1.3 Overview of Schedule Status

Exhibit 1-2 presents the latest, high level milestone chart (i.e., dated October 26, 1994) for all technical tasks assigned on the EOSDIS IV&V contract. In conjunction with this exhibit, Exhibit 1-3 lists in chronological order all deliverables/milestones associated with the contract and the status of each.

Exhibit 1-2: Gitelman Milestone Chart (Landscape Paste-up)

Date

Due Milestone/Deliverable Task# Status* Comments
 7/8/94 ECS Release A SDR IV&V
 RIDs 5C Accomplished within 17 days of contract award.
 7/8/94 SDR IRD RID Package 9C Accomplished within 17 days of contract award.
 7/15/94 M1 Requirements and Architecture 4C Submitted on time.
 8/16/94 IV&V Management Plan - Draft 3C Submitted ahead of schedule.
 8/16/94 M1 Initial Tool Architecture Review 4C Conducted ahead of schedule.
 8/30/94 ISE System Requirements - Draft 4C Submitted on time.
 10/7/94 EOSDIS Modeling Assessment Report (User Demographics) 5C Submitted on time.
 10/17/94 ISVVP - Initial 3C Submitted on 10/18/94.
 10/17/94 Certification Criteria Determination Report - Initial 10C Submitted on time.
 10/18/94 M1 Demonstration 4C Conducted on schedule.
 10/28/94 Preliminary ECS Rqmts Analysis Report 5C Submitted on time.
 10/31/94 ISE System Requirements - Update 4C Submitted on time.
 10/31/94 Version 0 User Assessment 9C Submitted on time.
 11/30/94 CUP Study Report (Studies: 1-4, 6) 12IP On

schedule.12/1/94ECS-TRMM IRD Pilot TAR9IPInternal review in process.12/16/94IV&V Management Plan - Final

3IPAhead of schedule.12/16/94ISVVP - Update3IPOn schedule.12/16/94ISE System Architecture - Draft4IPOn schedule.12/16/94ECS Release A PDR IV&V RIDs5O12/16/94Performance Dependency Analysis Tool Requirements10O12/16/94EICP - Initial10O12/30/94Initial ARDB5O12/30/94EOSDIS Modeling Assessment Report5O12/30/94Baseline Rqmts. Analysis Report12O12/30/94SCR RIDs12O1/16/95ISE System Architecture Review4O1/16/95ECS Release A PDR RIDs9O1/31/95ISE System Architecture - Update4O1/31/95ISE Development Plan - Draft4O1/31/95CUP Study Report (Studies: 5, 7-10)12O2/16/95M1 Revision 2 Demo4O2/28/95ISE Development Plan - Final4O3/1/95Initial ARDB for IRD Requirements9O3/16/95ECS Interim Rel 1 Rqts Analysis Report5O3/16/95ISE Element Requirements - Draft4O3/16/95EICP - Interim10O* C = Completed, IP = In Process, O = Open, D = Delayed, CX = CanceledEXHIBIT 1-3: Status of Milestones/Deliverables

Date	Due	Milestone/Deliverable	Task#	Status	*Comments
4/17/95		ISE Element Requirements - Update	4O4/28/95	SRR	RIDs12O5/16/95
		ISE Element Software Design - Draft	4O5/31/95	ISE	System Design Review
		Acceptance Test Plan - Preliminary	12O6/15/95		Certification Criteria Determination Report - Update
		10O6/15/95	EICP - Final	10O9/30/95	Draft Release IR-1 Test Plans and Test Procedures
		11O12/30/95	Final Release IR-1 Test Plans and Test Procedures	11O6/1/96	Initial Release A Test Plans and Test Procedures
		11OETS CDR + 2 weeks	ETS CDR RIDs5O	Release A CDR + 2 weeks	ECS Release A CDR IV&V RIDs5O
		As Completed	Release IR-1 Test Reports	11O*	C = Completed, IP = In Process, O = Open, D = Delayed, CX = Canceled

EXHIBIT 1-3: Status of Milestones/Deliverables (Continued)

1.4 Performance Assurance Activities/Issues¥ Program-level training on the larger aspects of EOSDIS is currently being planned for all IV&V team members. The intent of this training is to give all team members a broader knowledge of the program as a whole, as well as a more fundamental sense of program goals and issues.

¥ Formal training on the RTM tool to support the analysis tasks (i.e., Tasks 5 and 9) is scheduled for early November.

¥ Training on Lotus Notes began at the end of October. This periodic training program will continue through 1/95 and will cover user training, application development training, and system administration.

¥ The IV&V library is currently being populated and catalogued. A Home Page will be added to the Internet and linked to Hughes' Electronic Data Handling System (EDHS) to facilitate user access.

¥ We are in the process of developing a formal tracking mechanism to monitor any issues raised by the IV&V team with respect to developer or program performance. This system will include the status or resolution of each issue and will be available for COTR review and comment.

¥ We believe that our contract performance and value to the EOSDIS program will be significantly enhanced if we can establish a proactive involvement within the ESDIS community. With this in mind, we recommend the following:

- That we obtain desk space at HAIS to facilitate a day-to-day interface and information exchange. Such an arrangement would also promote our participation in all relevant meetings involving the system prime.
- That we gain access to the ESDIS Project's Configuration Control Board (CCB) minutes. This will allow us to always know the complete status of the EOSDIS program and will enable us to make recommendations based on current information.

1.5 Major Short Term Activities Planned

¥ Office Operations

- Move the Greenbelt office to permanent quarters on second floor. This move is scheduled for early December.

¥ Communications

- Brief John Dalton in mid-November on IV&V activities and findings to date.
- Continue developing interfaces and data access privileges between the IV&V team and Goddard, Hughes, TRW, CSC, and the Software IV&V Facility in West Virginia. Get on appropriate distribution lists.
- Bring IV&V document library on-line.

¥ Tasking

- Initiate the Special Studies Task (i.e., Task 13).

¥ Technical Performance

- For Task 3, make revisions to both the IV&V Management Plan (IVVMP) and the Independent System V&V Plan (ISVVP). Also submit the revised Tool Management Plan appendix for the IVVMP.
- For Task 4, update the ISE System Requirement Document and begin writing the draft ISE System Architecture Document. Also continue with Lotus Notes training and attend the Requirements Traceability Management (RTM) system administration training.
- For Task 5, analyze the HAIS user and performance models (Version 1.0), and receive RTM user and system administrator training.
- For Task 9, perform traceability analysis on TRMM, begin analyzing all other IRDs that are nearing baselining, and receive RTM user training.
- For Task 10, continue developing system certification criteria and work to bring EOSDIS Integration and Certification Plan (EICP) activities back on schedule.
- For Task 12, perform system engineering analysis on TRW's CUP study reports; initiate the EDOS requirements database design and development effort; and present the AM-1 specific V&V plan to the EDOS project.

1.6 Key Long Range Plans/Schedules

The IV&V team will support the activities and milestones identified in Exhibit 1-2. Emphasis will be placed on those activities that are on the critical path to support the on-time launch of the spacecraft. Such activities include Key Interface and Integration Testing (KIIT) and System Certification.

2. TECHNICAL INFORMATION

2.1 Task # 3: Independent Verification and Validation Plans

a) Task Accomplishments

- ¥ Submitted draft of the Independent System V&V Plan (ISVVP).

¥ Made excellent progress on revisions to the IV&V Management Plan (IVVMP). Currently three weeks ahead of planned schedule. (See Appendix 3A for summary task schedule.)

b) Issues/Concerns

¥ None.

c) Subcontractor Performance

¥ Both CTA and EWA provided valuable technical inputs to the IVVMP and the ISVVP. SMSRC also provided support by reviewing both plans.

d) Planned Activities

¥ Make revisions to both the IVVMP and the ISVVP.

¥ Submit the revised Tool Management Plan appendix for the IVVMP.

¥ Support program meetings and briefings as required.

2.2 Task # 4: IV&V Infrastructure and Tool Development

a) Task Accomplishments

¥ Completed developing the M1 user interface software for the Automated Requirements Database (ARDB) to satisfy the near-term needs of the Requirements Analysis Task (Task 5).

¥ Completed the data capture for M1 user interfaces associated with the Interface Analysis Database (IADB) to satisfy the near-term needs of the Key Interface Analysis Task (Task 9).

¥ Performed three M1 Demonstrations at the Intermetrics Greenbelt facility. The tools demonstrated included the Requirements and Traceability Management (RTM) tool, the Automated Requirements Database (ARDB), the Interface Analysis Database (IADB), Mosaic, the Block Oriented Network Simulator (BONeS), and Lotus Notes.

¥ Continued tool assessments for the Integrated Support Environment (ISE). Evaluated about 15 tools, including COTS tools as well as tools needed to establish the ISE.

¥ Submitted procurement justification material for selected ISE development environment tools. The selected tools include Visual C++, SQLWindows (client/server development tool), System Architect (PC CASE tool), PVCS (CM tool), and Oracle SQLNet.

¥ Delivered the first official release of the ISE System Requirements Document.

¥ Initiated the definition of the ISE architecture.

¥ Implemented Internet mail capability work-around until an assessment of additional software compatible with the NASA supplied X.500 mail server is completed.

¥ Evaluated Synerge and the Interface Data Consistency Analyzer tool to determine their suitability for interface analysis. These tools will serve as a model for IADB development.

¥ Attended Lotus Notes training as planned. Task 4 personnel received technical user and system administrator training.

b) Issues/Concerns

¥ The requirements for an IV&V-maintained centralized EOSDIS problem reporting system are unclear. We need to determine who will perform this activity, what tools will be used, and what interconnectivity issues will come to play. We are currently reviewing these topics with other IV&V team members.

c) Subcontractor Performance

¥ CTA performed well in analyzing the ISE and in defining/developing the interface analysis tools for the M1 demonstration. They also did a commendable job in supporting M1 demonstration activities.

¥ EWA performed well in supporting Fairmont system administration as well as developing M1 demonstration material for Mosaic. They also did a commendable job in supporting M1 demonstration activities.

d) Planned Activities

¥ Formulate plans for delivering the draft ISE System Architecture Document in mid December and begin writing various sections.

¥ Incorporate ISE System Requirement Document comments as they are received.

¥ Perform additional tool evaluations as needed.

¥ Continue developing the M1 Interface Analysis Database (IADB) application in support of the Key Interface Analysis Task (Task 9).

¥ Identify training alternatives for both Visual C++ and the SQLWindows product.

¥ Continue with Lotus Notes training as previously planned. Apply knowledge learned during Lotus Notes system administration training in reconfiguring Lotus Notes installation. Also, complete the development of the Lotus Notes Data Management applications so that database population can be initiated.

¥ Attend RTM system administration training.

¥ Continue network communication development and configuration in an effort to achieve full network capabilities.

¥ Support program meetings and briefings as required.

2.3 Task # 5: Requirements Analysis and Traceability

a) Task Accomplishments

¥ Completed Level 3 technical integrity requirements analysis (subtask 5.1) and submitted Preliminary Requirements Analysis TAR on 10/28/94.

¥ Continued ETS monitoring activity (Subtask 5.4) by attending regularly scheduled meetings and reviewing documents.

¥ Completed and delivered the Preliminary EOSDIS User Modeling Assessment Report on 10/7/94, which focused on user demographics (Subtask 5.3). Attended regularly scheduled ECS modeling meetings with Chris Daly and HAIS. Also, attended modeling presentation at HAIS.

¥ Supported bi-monthly IV&V status briefing (modeling assessment presentation)

¥ Attended various meetings including the DAAC Users Group meeting on 10/3 and 10/4, the HAIS monthly project review, and the EOS IWG meeting (Hunt Valley).

¥ Supported Task 4 M1 Demonstration by presenting the BONEs tool.

b) Issues/Concerns

¥ None.

c) Subcontractor Performance

¥ Subcontractor performance from CTA and SMSRC has been excellent.

d) Planned Activities

¥ Receive RTM user and system administrator training from Marconi.

¥ Analyze HAIS user and performance models (Version 1.0).

¥ Attend SpaceOps 94 conference.

¥ Initiate Subtask 5.2 (ECS IR-1 requirements analysis); import updated HAIS RTM database.

¥ Support program meetings and briefings as required.

2.4 Task # 9: Key Interface Analysis

a) Task Accomplishments

¥ TRMM Pilot Analysis

- Only one section of the requirements analysis remains to be peer reviewed.
- Completed internal draft TAR for internal review.

¥ Version 0 Performance Analysis

- Completed analysis and prepared report.
- Delivered presentation of results at 10/17/94 Program Status Review (PSR).

¥ Analysis of Other Key Interfaces

- Completed initial requirements review of Institutional IRD.
- Reviewed ECS Operations Concept Document, and compared with IRDs and Ground System Architecture Diagram. Prepared informal presentation for IV&V staff.
- Attended meetings of the ECS SIT.
- Developed IRD/ICD schedule based on releases, extracting information from inputs supplied by SES.

- ¥ Tool Requirements
 - Continued developing tool usage scenarios.
- b) Issues/Concerns
 - ¥ Many IRDs have already been baselined by HAIS (although not yet baselined by GSFC), requiring a phase up of IV&V personnel in early November to ensure that we achieve current milestones. We are currently in the process of reallocating resources and hiring additional staff to address this need.
- c) Subcontractor Performance
 - ¥ CTA is the task lead for this effort. Their performance has been excellent.
- d) Planned Activities
 - ¥ TRMM Pilot Analysis
 - Perform traceability analysis.
 - ¥ Version 0 Performance Analysis
 - Continue performance study under Special Studies Task (Task 13).
 - ¥ IRD/ICD Analysis
 - Receive RTM training.
 - Begin analyzing all IRDs nearing baselining.
 - Conduct peer review analysis of Institutional and Version 0 requirements.
 - Attend AOS Testing Symposium to gain lessons learned on interface testing of CCSDS interfaces.
 - Attend selected sessions of Space Ops Conference.
 - ¥ Staff
 - Interview for new hires.
 - ¥ Meeting Support
 - Support program meetings and briefings as required.

2.5 Task # 10: Development of EOSDIS Certification Plan

- a) Task Accomplishments
 - ¥ Submitted initial Certification White Paper to NASA which defined our general approach to certification. On schedule for certification criteria development. (See Appendix 10A for summary task schedule.)
 - ¥ Maintained program currency by actively participating in technical working groups.
- b) Issues/Concerns
 - ¥ The generation of the EOSDIS Integration and Certification Plan (EICP) is understaffed and behind schedule. We are currently re-examining our role to correct the situation. We are also actively reviewing resumes of potential candidates to support this activity.

c) Subcontractor Performance

¥ CTA is providing the majority of the technical staffing for this task. They developed an outline for the EICP as well as schedule inputs. They also supported the 10/17 PSR in the areas of Independent System Verification and an approach to the EOSDIS Certification program.

d) Planned Activities

¥ Continue certification criteria development activities.

¥ Work to bring the generation of the EICP back in line with original schedule requirements.

¥ Support program meetings and briefings as required.

2.6 Task # 12: EDOS IV&V

a) Task Accomplishments

¥ Reviewed EDOS Performance Verification Plan (PVP) and other EDOS-relevant documents.

¥ Prepared and presented the IV&V life cycle concept as well as our phase-dependent and phase-independent V&V approach to the EDOS Integration and Test (I&T) Manager.

¥ Supported the 10/17/94 PSR by presenting the EDOS IV&V task status.

¥ Attended various meetings to support the EDOS project including weekly staff meetings, monthly status meetings, and the Program Control and Management Board (PCMB) meeting.

¥ Arranged for TRW and other EDOS support contractors to attend the EOSDIS IV&V M1 Tools Demonstration given at the Intermetrics Greenbelt office.

b) Issues/Concerns

¥ None.

c) Subcontractor Performance

¥ CTA added valuable support by aiding in the technical presentation to the EDOS I&T Manager. They also supported this task by adding a new staff member who began on 10/24/94.

d) Planned Activities

¥ Perform system engineering analysis on TRW's CUP study reports as well as EDOS technical documents.

¥ Plan Criticality Analysis and Risk Assessment (CARA) activities and develop initial IV&V plans for the program.

¥ Prepare and present AM-1 specific V&V plan to the EDOS project.

¥ Initiate the EDOS requirements database design and development effort.

¥ Support program meetings and briefings as required.

SECTION 2 APPENDICES

APPENDIX 3A

Summary Task 3 Schedule

APPENDIX 10A

Summary Task 10 Schedule

3. FINANCIAL/CONTRACTUAL INFORMATION

Section 3 of This Report
Has Been Removed
Due to Proprietary Content.

CONTRACT NAS5-32605
EOSDIS IV&V

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